

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 10.

May, 1908.

No. 113.

THE CRATAEGI OF THE NORTHEASTERN UNITED STATES AND ADJACENT CANADA.

W. W. EGGLESTON.

THE genus *Crataegus* presents an interesting problem, and one for the study of which we are just beginning to get sufficient data. Up to ten years ago the American species of this genus were much better known in European botanical gardens than at home; and one of the most vexing problems of the present in regard to the group is to know precisely what has been meant by the species described in Europe.

In preparing a treatment of the genus soon to be issued I have endeavored, first to give a clear characterization of the different sections, with good keys; second to take up the more important published species and varieties, without even pretending to deal with every form that may prove worthy of recognition. Much more thorough work needs to be done in the field, and careful cultural experiments will have to be made, before the genus can be exploited finally.

The part of northeastern North America that really needs the most exploration in connection with this genus is southern Virginia, east of the Blue Ridge. Here should be found a number of the *Flavae* and other southern forms. Profitable work, however, can still be done all over the northeastern states and in adjacent Canada, both in extending the known ranges of old species and in finding new forms.

In my judgment much of the trouble found in *Crataegus* arises from hybridization, and why may not mutation be another disturbing element? Along these lines there is a fine field for experimental work. Unhappily, such investigation in the case of *Crataegus* offers much greater difficulty than in *Viola* where the whole life history can be observed within a year or so. In *Crataegus* it would require perhaps

eighteen months for the germination of the seed and from eight to ten years to secure mature fruit from the first generation. Thus one would need the equipment and backing of an arboretum to carry on such work on a scale sufficiently extended to secure definite results.

So far as known, the genus produces plenty of good seed, and the plantations at Biltmore, the Arnold Arboretum, and my own, at the New York Botanical Garden, have shown that the forms of the genus reproduce themselves surprisingly true from seed. Yet, further experiments are greatly to be desired, in which *all* the seed from a single tree are retained and raised to maturity. When this is tried, it will be surprising indeed if *Crataegus* differs from other members of the Rose Family, which are so notoriously susceptible to crossing.

The genus is so variable that it is impossible to find characters which will hold absolutely true, either between species or even sections; then again, characters which seem to hold good in one section are useless in the next. Thus in the *Molles* and *Coccineae* certain species have cordate leaves on their vegetative shoots, but in the *Tenuifoliae* and *Pruinosae* both cordate and wedge-shaped leaves occur on the same plant.

The best time to study *Crataegi* is when they are in mature fruit. Often it is impossible to name dried flowering material closer than to one of two groups, while mature fruiting material, even in the dried state, would easily settle the species. This case holds particularly true between the *Tenuifoliae* and *Pruinosae*, the *Coccineae* and *Molles*, the *Macracanthae* and *Anomalae*.

Personally I am fast losing confidence in the number of stamens as a reliable diagnostic character. It is true that in a general way the flowers of many species seem to have prevailingly 5-10 stamens or 10-20 stamens, but both 10-stamened and 20-stamened flowers sometimes are found on the same tree; and material is fast accumulating which seems to show that for every 10-stamened form somewhere a similar form will occur with 20 stamens, and the reverse.

In a general way color of anthers seems to be correlated with color of the immature foliage; thus yellow anthers go with yellow-green leaves, pink anthers with bronze-green leaves; and the different sections have their own particular color. For instance, the only constant difference between the *Coccineae* and the *Molles* is this color difference, all other distinctions breaking down at some point; but even this character must be employed with caution, particularly if

there are hybrids in the genus, for plants are often encountered which have seemingly the wrong anther-color; thus *Pruinosae* and *Tenuifoliae*, which habitually have pink anthers, occasionally exhibit yellow anthers. In the North one would naturally investigate these as probable crosses with the *Rotundifoliae*, *Intricatae*, or *Molles*. The section *Macracanthae* is one of the most easily distinguished because the nutlets have pits on their inner faces, and naturally a hybrid between one of the *Macracanthae* and a species with plane nutlets would be marked. One would expect in such a form nutlets with pits of all degrees of depth, and forms of this sort are in fact often found in nature.

One of the best places to study *Crataegus* hybrids is in the Northwest, where there are only three groups represented, one with black fruit, the others with red. In this region forms with brown or chestnut-colored fruit are found, but they are relatively so scarce as to suggest hybrid origin.

Although anther-color seems to be of value in determining *Crataegi*, it is a distinction which cannot be used in the case of dried material, and even in the live plants it is of such short duration that I have left it out of my keys.

Reliable characters are to be found in the fruits, number of nutlets, sculpture of the nutlets, and consistency of the flesh, whether hard or soft at maturity, and form of the calyx, while even the leaves and sepals are of more permanent aid to us than the color character.

In sectional names the oldest known have been used. Fortunately only one section had to be renamed. For this I used the name of the oldest as well as the most characteristic species, as follows:

Rotundifoliae, n. nom. *Coccineae* Sarg. Man. Trees N. A. 366 (1905), not Loudon, Arb. et Frut. Brit. 2: 816 (1838).

Other notes and nomenclatorial changes which it seems best to put on record together with synonymy and bibliography are as follows:

C. CRUS-GALLI L., var. **exigua** (Sarg.), n. comb. *C. exigua* Sarg. Rhod. 5: 52 (1903).

C. CRUS-GALLI L., var. PRUNIFOLIA (Poir.) Loud. Arb. et Frut. Brit. 2: 821 (1838). *Mespilus prunifolia* Poiret, Encyc. Method. 4: 443 (1797) and in Nouveau Duhamel Traité des Arbres et Arbust. 4: 150, t. 40 (1809). *C. attenuata* Ashe, Jour. Elisha Mitchell Soc. 19: pt. 1, 30 (1903). This variety seems to have been subject to a mistaken interpretation, which needs revision. Poiret's description

and plate call for a glabrous form of *C. Crus-galli* with rather broad and somewhat acute-pointed leaves. The form occurring at Port Huron, Mich., and Windsor, Ontario (*C. attenuata* Ashe) exactly fits this plate. It is to be noted that *M. prunifolia* Poiret originally came from Canada. Furthermore as *C. Crus-galli* is an extremely rare form in Canada, this southern Ontario region being the only place where it is known to occur native, the evidence seems very clear that this particular form is the original of var. *prunifolia*. Unfortunately the name *prunifolia* after Poiret's time was transferred both in botanical gardens and in literature to a broad-leaved form of *C. Crus-galli* with pubescent leaves and corymbs (see for instance DeCandolle, Torrey and Gray, etc.).

C. Crus-galli × **macracantha**, n. hybr. Certain broad-leaved individuals with foliage as in *C. Crus-galli*, var. *prunifolia*, the corymbs pubescent, the calyx-lobes serrate, the nutlets 2-3, their pits varying from shallow to deep, have all the appearance of being natural hybrids between these two species. (*C. persimilis* Sarg.; *C. prunifolia* of European gardens, in part.) — Occasional.

C. BERBERIFOLIA T. & G., var. **Engelmanni** (Sarg.), n. comb. *C. Engelmanni* Sarg. Bot. Gaz. **31**: 2 (1901).

C. COLLINA Chapm., var. **sordida** (Sarg.), n. comb. *C. sordida* Sarg. Bot. Gaz. **33**: 114 (1902).

C. COLLINA Chapm., var. **Lettermani** (Sarg.), n. comb. *C. Lettermani* Sarg. Bot. Gaz. **31**: 220 (1901).

C. APPOSITA Sarg., var. **Bissellii** (Sarg.), n. comb. *C. Bissellii* Sarg. Rhod. **5**: 65 (1903).

The name *C. COCCINEA* has been applied to many different plants both by Linnaeus himself and by later authors. Linnaeus, Sp. Pl. ed I, **1**: 476 (1753), thus describes *C. coccinea*: —

“CRATAEGUS foliis ovatis repando angulatis serratis glabris.
Hort. cliff. 187 [1737]. *Hort. Ups.* 126 [1748]. *Gron. virg.*
54 [1739]. *Roy. lugdb.* 272 [1740].

Mespilus, apii folio virginiana spinis horrida, fructu amplo coccineo.
Pluk. Alm. 249. t. 46. f. 4 [1691].

Mespilus spinosa s. Oxyacantha virginiana maxima. *Angl. hort.* [Catalogus plantarum. . . . quae in hortis non procul a Londino propagantur] 49. t. 13. f. 1 [1730].

Habitat in Virginia, Canada.

Variat cum validis spinis lateralibus & absque spinis.”

Here the first three paragraphs undoubtedly refer to three distinct species, belonging to three sections of the genus. The plant of the first paragraph is represented in the British Museum by a small fragment of Plukenet's labeled as of t. 46, f. 4, and supposed to have come from Virginia. This Plukenet specimen is so incomplete that it is impossible to determine the species to which it belongs. See Sarg. Bot. Gaz. **31**: 12 (1901). My photograph of this type seems clearly to represent a form of the group *Coccineae* Loud. For further confirmation of this view, see Miller, Dict. ed. I, no. 8 (1731), ed. VII, nos. 7 and 8 (1759), ed. VIII, no. 4 (1768); Aiton, Hort. Kew. ed. I, **2**: 167 (1789); Watson, Dendr. Brit. **1**: t. 62 (1825); Hook. Bot. Mag. t. 3432 (1835); Loud. Arb. et Frut. Brit. **2**: 816 (1838); and T. & G. Fl. N. A. **1**: 465 (1840).

Plate 3432 in the Botanical Magazine represents a flowering specimen with pink anthers and ten stamens, which must have been very near either *C. pedicillata* or *C. polita* Sarg. This seems good evidence for *C. coccinea* Mill. and for the section *Coccineae* Loud. But the Plukenet type is so incomplete as to be undeterminable and might easily belong in the section *Molles* as Prof. Sargent (Bot. Gaz. **31**: 12, 1901) thinks, and therefore this vague element in the composite should be ignored if there is another covered by the Linnaean description which we can determine. Happily this is the case and it is possible to identify both the other elements included by Linnaeus under the composite *C. coccinea* of the first edition of his *Species Plantarum*. The second plate cited by Linnaeus, namely, a fine colored one in Angl. Hort. 49, t. 13, f. 1 (1730), is unmistakably *C. Phaenopyrum* (L. f.) Medic. This species, under any rule can be eliminated from the question if we can determine the species represented by the first plate. This first plate, Pluk. Alm. 249, t. 46, f. 4, has been variously interpreted. It was, without much doubt, drawn from material collected by Banister in Virginia (Chesapeake Bay region). These Banister-Plukenet types are preserved in the British Museum, as is also the later material collected by Clayton in Virginia. Mr. James Britten kindly sent me photographs of these *Crataegus* types, but the one supposed to be the original of t. 46, f. 4 I saw at once could not have been used to make this plate. Mr. Britten made another search and found an unnumbered specimen of Plukenet's that he says does exactly match the plate. This is fortunately in mature fruit. Mr. Britten was so kind as to send me one of the fruits and this at once

decided the question. It is a red-brown pubescent fruit with firm flesh, and, when the type of leaves is considered, can represent no other American thorn than *C. modesta* Sarg. These facts, together with the circumstance that the form in question is one of the few known from the Chesapeake Bay region ought to settle the status of *C. coccinea* L.

This species seems to have been rarely collected by the early American botanists. It is represented in the Torrey herbarium (N. Y. Bot. Gard.) by a specimen from West Point, N. Y. (1825), in regard to which Dr. Gray recorded the opinion that this was exactly the *C. glandulosa* of Pursh as seen in the Barton herbarium.

The following synonyms appear to belong to this species:—*C. coccinea*, var. *viridis* T. & G. Fl. N. A. 1: 465 (1840), in part. *C. intricata* J. Lange, Bot. Tidssk. 19: 264 (1895). *C. modesta* Sarg. Rhod. 3: 28 (1901). *C. premora* Ashe, Ann. Car. Mus. 1: 391 (1902).

The history of *C. coccinea* is rendered still more complex by the fact that Linnaeus in subsequent publications included in his species still other elements. Thus in the second edition of the Species Plantarum (1762) he added the description and cited the plate of Miller's *Mespilus cordata*. Finally in the Mantissa altera, 397 (1771) he gives a description which points to still a fifth species and group, namely to the plant here called *C. rotundifolia*, var. *Faxoni*. This last is the form taken up by Prof. Sargent for *C. coccinea* (Bot. Gaz. 31: 12, 1901).

It would take a small volume to discuss critically the forms taken up by authors since the time of Linnaeus for *C. coccinea*. Indeed the species has been made a sort of general dumping ground for unknown forms.

C. TOMENTOSA L. *C. uniflora* Muench. Hausv. 5: 147 (1770). *C. parvifolia* Ait. Hort. Kew. ed. I, 2: 169 (1789). *C. tomentosa* is another badly interpreted species. It also came from the Chesapeake Bay region (*Banister*) and as published by Linnaeus is a composite. The first paragraph relating to the species in L. Sp. Pl. ed. I, 1: 476 (1753) "*Craetaegus* foliis cuneiformi-ovatis serratis subangulatis subtus villosis, ramis spinosis. Habitat in Virginia" can refer to but one plant of this region; while the expression "ramis spinosis" will not fit the form *C. tomentosa* T. & G., and this form does not occur in the Chesapeake Bay region. In Sp. Pl. ed. II, 1: 682 (1762), Linnaeus adds "*Mespilus virginiana*, grossulariae foliis. Pluk. phyt.

100. f. 1." Of this plate Plukenet, Alm. 249 (1696) says: "Mespilus Virginiana grossulariae foliis, fructu rubro minore, Phytogr. Tab. 100. f. 1. an Oxyacanthus folio parvo subrotundo, flore unico, theca foliacea incluso summitatibus ramulorum insidente *Banisteri*." This unmistakably places the species, as there is only this one-flowered species in the region. See also Miller's Dict. ed. VIII (1768) under *C. tomentosa* L., as also Michaux, etc., for further confirmation of our views.

C. TOMENTOSA L., var. **Smithii** (Sarg.), n. comb. *C. Smithii* Sarg. Trees and Shrubs, 1: 67, t. 34 (1903).

C. COLUMBIANA Howell, var. **Piperi** (Britton), n. comb. *C. Piperi* Britton, Torreya, 1: 55 (1901).

C. COLUMBIANA Howell, var. **Brunetiana** (Sarg.), n. comb. *C. Brunetiana* Sarg. Rhod. 5: 64 (1903).

C. IRRASA Sarg., var. **Blanchardi** (Sarg.), n. comb. *C. Blanchardi* Sarg. Rhod. 7: 218 (1905).

C. ROTUNDIFOLIA Moench, var. **Bicknellii**, n. var. foliis ad apicem modice acute lobatis; corymbis paullo villosis mox glabris; calycis lobis longis laciniatis persistentibus ad maturitatem fructus; nucellis saepissime 4-5.—Leaves somewhat sharply lobed towards the apex; corymbs slightly villous, soon glabrous; calyx-lobes long, lacinate, persistent on the fruit; nutlets usually 4-5.—Nantucket, Mass.: Wauwinet, June 5, 1900 (in flower), *Miss Mary A. Day*, no. 76; Polpis, September 5, 1904, *E. P. Bicknell* (type, in Herbarium of the New York Botanical Garden); also Quaise, September 19, 1907, *E. P. Bicknell*. Mr. Bicknell says "this is a round-topped shrubby tree, sometimes 3 m. high, of which I know only a few individuals."

The only other native thorn that I have seen from Nantucket is a specimen of the *Intricatae* (in leaf only), collected by Mr. Bicknell. This is likely to be *C. apposita* Sarg.

C. ROTUNDIFOLIA Moench, var. **Faxoni** (Sarg.), n. comb. *C. Faxoni* Sarg. Rhod. 5: 161 (1903). *C. coccinea* of the Linnaean Herbarium in part. See Sarg. Bot. Gaz. 31: 12 (1901); L. Sp. Pl. ed. III, 1: 682 (1764).

C. ROTUNDIFOLIA Moench, var. **chrysocarpa** (Ashe), n. comb. *C. chrysocarpa* Ashe, Bull. N. Car. Agric. Coll. 175: 110 (1900).

C. Marshallii, n. nom. *Mespilus apiifolia* Marsh. Arb. 89 (1785). *C. apiifolia* Michx. Fl. 1: 287 (1803), not Medic. Gesch. 83 (1793).

C. LUCORUM Sarg., var. **insolens** (Sarg.), n. comb. *C. insolens* Sarg. Rhod. 7: 217 (1905).

C. MACROSPERMA Ashe, var. **pentandra** (Sarg.), n. comb. *C. pentandra* Sarg. Rhod. 3: 25 (1901).

C. MACROSPERMA Ashe, var. **demissa** (Sarg.), n. comb. *C. demissa* Sarg. Rhod. 5: 139 (1903).

C. MACROSPERMA Ashe, var. **pastorum** (Sarg.), n. comb. *C. pastorum* Sarg. Rhod. 3: 24 (1901).

C. MACROSPERMA Ashe, var. **matura** (Sarg.), n. comb. *C. matura* Sarg. Rhod. 3: 24 (1901).

C. MACROSPERMA Ashe, var. **acutiloba** (Sarg.), n. comb. *C. acutiloba* Sarg. Rhod. 3: 23 (1901).

C. Grayana, n. sp., foliis flabellatis 3–8 cm. longis 2–7 cm. latis basi cuneatis vel truncatis apice acuminatis simplice vel duplice serratis, dentibus parvis rectis, lobis 4–5-jugis acuminatis saepe recurvatis; foliis junioribus supra et subtus in veniis paullo appresse pubescentibus mox glabratis membranaceis supra obscure viridibus subtus pallidioribus; petiolis gracilibus 1.5–3 cm. longis glabris; corymbis multifloris paullo villosis, floribus 1.5–1.8 cm. latis; tubo calycis subtus villosus supra glabro, lobis lanceolatis acuminatis circa 5 mm. longis glabris integris vel remote glandularibus; staminibus circa 20, antheris roseis; stylis 3–5 basi tomento pallido circumdatis; fructu subgloboso vel breviter ellipsoidali angulari 10–15 mm. crasso atrorubenti paullo villosus sed glabrato; pericarpio crasso farinaceo flavo; sepalis patentibus persistentibus; nucellis plerisque 4–5, dorso carinatis, 6–7.5 mm. longis, fasciculo nucellarum 6–8 mm. crasso.—Leaves flabellate, 3–8 cm. long, 2–7 cm. wide, cuneate to truncate at the base, acuminate at the apex, simply or doubly serrate with fine straight teeth, with 4–5 pairs of acuminate often recurved lobes; young leaves with a straight appressed pubescence above and along the veins beneath, becoming glabrous, membranaceous, dull green above, paler beneath; petioles slender, 1.5–3 cm. long, glabrous; corymbs many-flowered, somewhat villous; flowers 1.5–1.8 cm. wide; calyx-tube villous below, glabrous above; calyx-lobes lanceolate, acuminate, about 5 mm. long, glabrous, entire or remotely glandular; stamens about 20; anthers pink; styles 3–5, surrounded at the base by pale tomentum; fruit subglobose to short-ellipsoidal, angular, 10–15 mm. thick, dark crimson, slightly villous, becoming glabrous; sepals spreading, persistent; flesh thick, mealy, yellow; nutlets usually 4–5, ridged on the back, 6–7.5 mm. long, nest of nutlets 6–8 mm. thick.—Round-topped shrubs or small trees, sometimes 6 m. high, armed with chestnut-brown curved thorns 2–5 cm. long; vegetative twigs chestnut-brown, glabrous.—Montmorency Falls to Montreal, Que., western New England, and northeastern New York. Type no. 2762 *Eggleston*, Caughnawaga Reservation, Quebec, May 28, Sept. 25, 1902 (in hb. Gray).

Of this species I have examined the following specimens:—
 PROVINCE OF QUEBEC: Montmorency Falls, May 30, Sept. 23, 1901, *J. G. Jack*, nos. 128, 131 (hb. Arn. Arb.); Longueuil, May 27, Sept. 25, 1902, *J. G. Jack*, no. 138 (hb. Arn. Arb.); Mount Royal, Oct. 6, 1903, *Eggleston*, no. 3339 (hb. N. Y. Bot. Gard., hb. Egg.); La Tortue, May 30, Oct. 4, 1900, *W. A. Jack*, no. 68 (hb. Arn. Arb.); Highlands (Island of Montreal), May 30, Sept. 21, 1901, Sept. 26, 1902, *J. G. Jack*, no. 134 (hb. Arn. Arb.); Caughnawaga, May 30, Sept. 24, 1900, *J. G. Jack*, nos. 83, 84 (hb. Arn. Arb.); May 28, Sept. 25, 1902, *Eggleston*, no. 2762 (hb. Gray, hb. N. Y. Bot. Gard., hb. Egg.); Chateaugay, May 31, Sept. 25, 1900, *J. G. Jack*, no. 871 (hb. Arn. Arb.); Phillipsburg, July 25, 1901, *E. Brainerd*, no. 28 (hb. Arn. Arb., hb. Egg.). NEW YORK: Crown Point, June 4, Sept. 21, 1902, *Eggleston*, nos. 2703, 3154 (hb. Arn. Arb., hb. Egg.); Sept. 12, 1903, *C. H. Peck*, no. 4 (hb. Arn. Arb.). NEW HAMPSHIRE: North Walpole, May 17, Oct. 4, 1903, *Eggleston*, no. 2923 (hb. Arn. Arb., hb. Egg.). VERMONT: Mr. W. H. Blanchard has collected material in Bellows Falls, which he has referred to this species, but I have not seen it. MASSACHUSETTS: Southborough, May 17, Sept. 4, 1904, *C. S. Sargent*, no. 4 (hb. Arn. Arb.). CONNECTICUT: Giant's Neck, East Lyme, May 3, Aug. 19, Sept. 5, 16, 1904, *C. B. Graves*, no. 70 (hb. Arn. Arb.).

C. PRUINOSA (Wendl.) C. Koch, var. **latisepala** (Ashe), n. comb.
C. latisepala Ashe, Bull. N. Car. Agric. Coll. **175**: 109 (1900).

C. PRUINOSA (Wendl.) C. Koch, var. **philadelphica** (Sarg.), n. comb.
C. philadelphica Sarg. Proc. Acad. Sci. Philad. **57**: 588 (Sept. 1905).

C. PRUINOSA (Wendl.) C. Koch, var. **conjuncta** (Sarg.), n. comb.
C. conjuncta Sarg. Rhod. **5**: 57 (1903).

C. PRUINOSA (Wendl.) C. Koch, var. **Porteri** (Britton), n. comb.
C. Porteri Britton, Bull. N. Y. Bot. Gard. **1**: 448 (1900).

C. PRUINOSA (Wendl.) C. Koch, forma **dissona** (Sarg.), n. comb.
C. dissona Sarg. Rhod. **5**: 60 (1903).

C. SILVICOLA Beadle, var. **Beckwithae** (Sarg.), n. comb. *C. Beckwithae* Sarg. Proc. Roch. Acad. Sci. **4**: 124 (1903).

C. BEATA Sarg., var. **compta** (Sarg.), n. comb. *C. compta* Sarg. Proc. Roch. Acad. Sci. **4**: 102 (1903).

C. LEIOPHYLLA Sarg., var. **Maineana** (Sarg.), n. comb. *C. Maineana* Sarg. Proc. Roch. Acad. Sci. **4**: 106 (1903).

C. COCCINIOIDES Ashe, var. **dilatata** (Sarg.), n. comb. *C. dilatata* Sarg. Bot. Gaz. **31**: 9 (1901).

C. PRINGLEI Sarg., var. **exclusa** (Sarg.), n. comb. *C. exclusa* Sarg. Rhod. **5**: 108 (1903).

C. PRINGLEI Sarg., var. **lobulata** (Sarg.), n. comb. *C. lobulata* Sarg. Rhod. **3**: 22 (1901).

C. PEDICILLATA Sarg., var. **Ellwangeriana** (Sarg.), n. comb. *C. Ellwangeriana* Sarg. Bot. Gaz. **33**: 118 (1902).

C. POLITA Sarg., var. **Tatnalliana** (Sarg.), n. comb. *C. Tatnalliana* Sarg. Bot. Gaz. **35**: 106 (1903).

C. MOLLIS (T. & G.) Scheele, var. **sera** (Sarg.), n. comb. *C. sera* Sarg. Bot. Gaz. **33**: 115 (1902).

C. PHAENOPYRUM (L. f.) Medic. Gesch. der Bot. 83 (1793). *Mespilus Phaenopyrum* L. f. Suppl. 254 (1781). *Crataegus cordata* Ait. Hort. Kew. ed. I, **2**: 168 (1789); not *M. cordata* Mill. Dict. ed. VIII, no. 4 (1769) and in Fig. of Plants, 119, t. 179 (1760). This fine species was one of the first American thorns raised in Great Britain, being listed and illustrated by a fine colored plate (t. 13, f. 1) in the *Catalogus plantarum... quae in hortis non procul a Londino propagantur* (1730). Philip Miller, who was one of the gardeners who prepared this catalogue and was doubtless familiar with this species, tells us in regard to his *Mespilus cordata* of later date, that it was raised in the Chelsea Garden (where he was gardener) in 1738 from seeds which came from America. Furthermore neither his description nor his excellent colored plate of this later species corresponds to *C. Phaenopyrum*, but rather to some form of the *Tenuifoliae*, apparently nearest to *C. macrosperma* Ashe.

C. BRAINERDI Sarg., var. **scabrida** (Sarg.), n. comb. *C. scabrida* Sarg. Rhod. **3**: 29 (1901).

C. BRAINERDI Sarg., var. **Egglestoni** (Sarg.) Robinson in herb., n. comb. *C. Egglestoni* Sarg. Rhod. **3**: 30 (1901).

C. BRAINERDI Sarg., var. **asperifolia** (Sarg.), n. comb. *C. asperifolia* Sarg. Rhod. **3**: 31 (1901).

C. MACRACANTHA Lodd., var. **rhombifolia** (Sarg.), n. comb. *C. rhombifolia* Sarg. Rhod. **5**: 183 (1903).

C. MACRACANTHA Lodd., var. **occidentalis** (Britton), n. comb. *C. occidentalis* Britton, Bull. N. Y. Bot. Gard. **1**: 448 (1900). *C. Colorado* Ashe, Bull. N. C. Exper. Sta. **175**: 110 (1900). *C. coloradensis* Nelson, Proc. Biol. Soc. Wash. **17**: 175 (1904).

C. MACRACANTHA Lodd., var. **succulenta** (Schrad.), n. comb. *C. succulenta* Schrad. ex Link, Handb. **2**: 78 (1831).

C. MACRACANTHA Lodd., var. **neofluvialis** (Ashe), n. comb. *C. neo-fluvialis* Ashe, Jour. Elisha Mitchell Soc. 16: pt. 2, 71 (1900).

C. CHAPMANI (Beadle) Ashe, var. **Plukenetii**, n. var. *C. tomentosa* of the Linnaean herbarium and of authors, but not of the Linnaean description. *C. leucophleos* Moench, Verz. Ausl. Baeume, 31 (1785)? This thorn was one of the first raised in Great Britain, as is shown by its inclusion in such early works as the above mentioned Catalogus plantarum . . . quae in hortis non procul a Londino propagantur t. 13, f. 2 (1730) and in Plukenet's Phyt. t. 46, f. 1 (1691).

Of the other two Linnaean species there can be no question, for *C. Crus-galli* L. rests on Kalm's description and is also represented in the British Museum by Clayton's specimen; while *C. viridis* L. is represented in the British Museum by Clayton's specimen (type), though I know of no other specimen of *C. viridis* L. from Virginia. However, there is a specimen of *C. viridis* L. in the U. S. Nat. Herb. (no. 130624) from Chesapeake City, Maryland, *L. F. Ward*. This Ward specimen I referred to *C. Margaretta* Ashe in *Torreyia* 7: 154 (1907); but a careful study of flowering material for a key has shown my mistaken identification. *C. Margaretta* has two or sometimes three styles, crenately lobed leaves, and numerous spines, while *C. viridis* has four or five styles, acutely lobed leaves, and very few or no spines. *C. viridis*, in flower, is much harder to distinguish from a form of *C. Canbyi* Sarg., namely the one called *C. Pennypackeri* Sarg.; the latter differing from *C. viridis* most obviously in its abundant thorns; and there is a possibility that this Ward specimen is *C. Pennypackeri* without thorns. Our Washington and Baltimore botanists have an excellent opportunity both to investigate this Chesapeake City region, and also Clayton's region about "Windsor" on the Plankatank, for the type location of *C. viridis* L.

Much of my study of the genus *Crataegus* has been done in the herbarium of the New York Botanical Garden, where for some months I have been engaged in bringing together as complete a representation as possible of the group. I have also been greatly aided by facilities afforded me at the Gray Herbarium, and I owe much to the privilege of examining the excellent herbarium and live collections of the Arnold Arboretum. I am further indebted to the Missouri Botanical Garden for the loan of over three thousand sheets of the genus, to the United States National Museum, to the Philadelphia Academy, to Prof. Aven Nelson, to President Ezra Brainerd

for the loan of much additional material, and to a great many botanical friends who have sent me specimens of interest. Mr. C. D. Beadle gave me the privileges of the Biltmore Herbarium and very kindly aided me in the examination of the southern species. Mr. W. W. Ashe most kindly made a three days' trip to allow me to see his *Crataegus* herbarium. I have also to thank Dr. Marshall A. Howe for numerous translations of the descriptions of the older species.

NEW YORK BOTANICAL GARDEN.

NOTES ON SOME PLANTS OF NORTHEASTERN AMERICA.

(Continued from page 55.)

M. L. FERNALD.

DENTARIA LACINIATA Muhl., var. **integra** (Schulz), n. comb. *Cardamine laciniata* (Muhl.) Wood, var. *integra* Schulz in Engler's Bot. Jahrb. xxxii. 349 (1903).—A rather local extreme, having the leaves strictly ternate; the lateral leaflets entire or slightly toothed, but not cleft. Known only from western New York to Illinois.

GAYLUSSACIA BACCATA (Wang.) C. Koch, forma **LEUCOCARPA** (Porter) Fernald, RHODORA, x. 53 (1908). My attention has been called by several friends to a clerical error by which, in the original publication of this combination, I credited Wangenheim instead of C. Koch with the publication of *G. baccata*. *G. baccata* (Wang.) C. Koch, Dendrol. ii. pt. 1, 93 (1872) was based upon *Andromeda baccata* Wang., Beitr. Holzger. iii. t. 30, fig. 69 (1787).

TEUCRIUM CANADENSE L., var. **littorale** (Bicknell), n. comb. *T. littorale* Bicknell, Bull. Torr. Bot. Cl. xxviii. 169 (1901).—A lower stiffer and usually more simple plant than the inland *T. canadense*, but clearly passing to it in rich soil. In their most extreme developments the two plants are easily distinguished; the var. *littorale* of coastal beaches having the upper surface of the leaves papillose-roughened beneath the fine appressed pubescence, while the plant of less exposed situations is, as we should expect, thinner-leaved and with less developed papillae.